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Death anxiety in patients with epilepsy

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Summary

Purpose: Whereas the relationship between epilepsy and anxiety has received much attention, less is known about the relationship between death anxiety and this disorder. The objective of this study was to assess death anxiety among epileptic patients who attended the outpatient neurology clinic at the Salmaniya Medical Complex, Kingdom of Bahrain.
Methods: Ninety-two patients (48 males and 44 females) completed a death anxiety scale. The scale items were adopted from already published surveys and adjusted to suit epilepsy patients.
Results: Results showed that the mean death anxiety score was moderate (2.75 ± 1.35), with 26.09% of patients reporting high levels of death anxiety. Period of illness and educational level were significant predictors of death anxiety. Female patients, generalized type of epilepsy, the short duration of the illness and low level of education were associated with higher death anxiety scores.
Conclusion: This study highlights the need for developing treatment strategies, counseling therapies and social support for people with epilepsy to decrease their death anxiety and improve their quality of life.
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Introduction

Numerous studies have revealed a significant relationship between death anxiety and psychological distress; depression and anxiety among different patient populations.[1–3] However, death anxiety among epileptic patients has been rarely studied. Existing evidence indicates that epilepsy populations have elevated levels of depression and anxiety, compared to matched controls.[4] Indeed, anxiety related to epileptic seizures may occur as anticipatory anxiety and affect the patient's state of anxiety[5] or it may be part of the epileptic aura.[6]

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Therefore, it follows logically that death anxiety could be a significant issue for individuals suffering from epilepsy. The present study will evaluate death anxiety among a sample of epileptic patients attending an outpatient neurology clinic in Bahrain. Death anxiety will be examined in relation to the period of the illness, educational level, gender, epilepsy type and perceived controllability of epilepsy. In addition, death anxiety will also be examined with regard to religious commitment, which has been shown to be an important component of death anxiety.[7]

Methods and materials

The study was conducted in the period from March to July, 2005. Epileptic patients attending the outpatient neurology clinic at the Salmaniya Medical Complex, Kingdom of Bahrain were selected on a consecutive basis and asked to fill out a death anxiety scale. Patients were selected on the basis of having epilepsy for a minimum of 5 years, and excluded if they already had an existing psychiatric diagnosis. Informed consent was obtained by all participants. The items of the scale were selected from previous surveys published in this field[8–11] and adjusted to suit epileptic patients. The scale items have been validated and tested in a previous study,[12] and the internal consistency was high (alpha = 0.94). The questionnaire has five levels; very low, low, moderate, high, and very high. The items and the domains are summarized in Table 1. Cut-off scores for high, moderate and low levels of death anxiety were based on levels reported in a previous study conducted in this region[12]; with low equal to or less than 2.5, moderate equal to scores between 2.5 and 3.49, and high equal to all scores above 3.5. Religious commitment was measured using the following categories: nil, low: praying less than five times/day, average: praying five times/day at home, high: praying five times with some in the mosque and very high: all the praying is done in the mosque.

Statistical analysis

Data were analyzed using the SPSS (Version 13) statistical program. Analysis was performed using stepwise multiple regression analysis and Pearson correlations as appropriate. $p < 0.05$ were considered statistically significant.

Results

The number of patients enrolled in the study was 92 (48 males and 44 females). The age of the patients (mean $\pm$ S.D.) was 33.53 $\pm$ 10.42 years (range 15–60 years). The mean number of seizure attacks in the previous 6 months was 1.75 (range = 0–5), and the mean number of drugs was 1.85 (range = 1–3). There was no statistical significance between the number of seizure attacks, number of antiepileptic drugs and death anxiety. It is found that 31.52% of the patients had experienced partial seizures and

Table 1 Means and standard deviations of death anxiety scale items

Item	Mean	S.D.
I am afraid of dying when I get my epileptic episode	3.48	1.69
I become scared when my physician informs me that I need a surgery	3.25	1.68
My illness causes my fear of dying	3.15	1.57
I become anxious when my medications are running out	3.05	1.46
It upsets me thinking of leaving loved ones when I die	2.96	1.66
It upsets me to hear about the death of others with the same illness	2.89	1.78
I fear to die in a painful way	2.80	1.66
I become anxious when visiting an epileptic patent at the hospital	2.80	1.53
It upsets me that I will not come back to this life after death	2.77	1.56
I am afraid that I will die suddenly	2.73	1.72
I hate to set next to a dying person	2.70	1.69
I am afraid that I will be alone when I die	2.70	1.46
It upsets me to hear talk about death	2.65	1.61
It scares me to participate in washing a dead body	2.64	1.52
I am afraid that I will die in my sleep	2.53	1.49
I fear the moment of death	2.56	1.44
I become upset when I participate in a funeral service	2.56	1.42
I wish that people would not use the word ''Death''	2.42	1.37
I wish that death was a curable disease	2.10	1.20
I avoid thinking about death	2.02	1.65

Table 2 Correlations of study variables

		1	2	3	4	5	6	7
1	Death anxiety							
2	Gender	0.36**						
3	Age	−0.07	−0.12					
4	Epilepsy type	0.34**	0.13	−0.26*				
5	Period of epilepsy	−0.43**	−0.15	0.24*	−0.22*			
6	Loosing control over epilepsy	0.22*	−0.09	−0.06	0.01	−0.05		
7	Education	0.21*	−0.05	−0.03	0.17	−0.04	−0.30**	
8	Religious commitment	0.07	0.15	0.00	0.09	−0.03	0.01	0.23*

Note $^{*}p < 0.05$, $^{**}p < 0$ .01.

68.48% had experienced generalized ones. Duration of epilepsy was 13.63 ± 10.8 years. The 51.1% of patients reported a duration of education less than 12 years and 48.9% indicated a duration of education equal to or more than 12 years.

Overall, the mean death anxiety score of the patients was moderate (2.75 + 1.35). The 43.48% of the sample was classified in the low and 30.43% in the moderate, while 26.09% reported a high level of death anxiety. The patients' response (mean ± S.D.) to each item in the death anxiety scale is shown in Table 1. The means ranged from 3.48 to 2.02.

Analysis of the study variables indicated that only death anxiety showed a gender difference with female patients reporting higher levels of death anxiety in comparison to males (3.16 versus 2.36, $t(90) = 3.67$, $p < 0.01$). With regard to epilepsy type, patients with generalized epilepsy reported higher levels of death anxiety compared to patients with partial epilepsy (3.00 versus 2.18, $t(90) = 3.43$, $p < 0.05$).

To show the direction of the correlations between the independent variables and death anxiety, Pearson correlations were calculated as shown in Table 2. Results show that gender, epilepsy type, period of epilepsy, education and loosing control over epilepsy (having seizure attacks more than three per month despite medical treatment) were correlated with death anxiety. To identify the factors that can predict death anxiety, stepwise multiple regression analysis was employed, with period of illness and education entered in the first step and religious commitment and loosing control entered in the second (Table 3). Period of illness and educational level were highly predictive and explained 22% of the variance, while religious commitment and loosing control of epilepsy did not significantly improve the variance explained suggesting that they were not significant predictors of death anxiety.

Table 3 Factors predicting death anxiety

	β	S.E.[a]
Step 1		
Period of illness	−0.43**	0.01
Education	−0.22*	0.13
ΔR^2 (adjusted)	0.22	
ΔF	13.75*	
Step 2		
Religious commitment	0.11	0.14
Loosing control of epilepsy	0.13	0.16
ΔR^2 (adjusted)	0.03	
ΔF	1.71	

Note $^{*}p < 0.05$, $^{**}p < 0$ .01.
[a] S.E. standard error of the mean.

Discussion

The aim of this study was to investigate death anxiety in epileptic patients. Our results showed that while the mean death anxiety score was moderate (2.75 + 1.35), over a quarter (26.09%) of patients reported high levels of death anxiety scale. Female patients and those with generalized epilepsy reported the highest death anxiety scores. Period of illness and educational level were significant predictors of death anxiety.

The results showed that the majority of epileptic patients were classified in both the low (43.48%) and moderate (30.43%) levels of death anxiety. Such large percentages in the moderate range could be attributed to socio-cultural factors such as religious beliefs of relief after death and rewards from GOD because of their illness in the after life.[12,13] However, just over a quarter (26.09%) of patients are still reporting high levels of death anxiety, suggesting that some individuals are experiencing anxiety at a severe level. Anxiety is a significant issue for epileptic patients and can be directly related to the possibility of seizures and some seizures can be triggered by anxiety itself.[14] Moreover, prejudice and ignorance still surround epilepsy, which can cause patients to become anxious independent of their condition. This can

lead to social discrimination, feelings of shame with regard to having an attack of epilepsy in public and the high probability that they may die during the attack.[15]

Our results show that period of illness was the strongest predictor of death anxiety and negatively correlated to death anxiety. Patients with short duration of illness are usually more anxious and have not enough time to adjust to this illness, and as such a new illness usually threatens and disturbs their cognitive functioning and life skills.[16]

Our study indicates that patients with generalized epilepsy have high level of death anxiety. The association between the type of epilepsy and anxiety has been established in different studied. It was found that anxiety disorders are more prevalent in focal (especially temporal lobe) than in generalized epilepsies.[4,6] However, others demonstrated anxiety disorders in frontal lobe epilepsy as well as primary or generalized seizures.[4] There were conflict results on the association between left temporal lobe epilepsy and anxiety.[6] The highest rates of anxiety were reported in patients with chronic refractory seizure disorders.[15]

The fact that females reported significantly higher levels of death anxiety represents a serious issue. This finding has been reported in previous studies[17] and is consistent with the Middle Eastern culture where females are more vulnerable to threats of illness and often feel more insecure due to the responsibility inherent in caring for family and children. However the evidence is mixed with some studies reporting higher levels of empathy scores for females that were associated with higher levels of death anxiety,[18] while other studies have shown no gender differences with regard to death anxiety.[19]

Our data showed that age and religious commitment were not predictors of death anxiety. However, studies have shown an inverse relationship of age and death anxiety. For example, some studies indicate that older persons have lower levels of death anxiety, and are more accepting of the reality of death compared with younger persons.[20] Additionally, the present study did not find religious commitment to be a significant predictor, whereas other studies have found that religious persons have more positive attitudes and less death anxiety than non-religious persons.[7]

Educational level was also a predictor of death anxiety and negatively correlated to death anxiety. Patients with lower levels of education were more prone to feel anxious about their illness compared to higher education level patients. This probably represents the fact that patients with higher levels of education are more likely to know more about the disease and are better prepared to deal with the seizure episodes.[21,22]

The present study has some limitations. The study was cross-sectional and thus causal relationships cannot be drawn without the collection of longitudinal data. A larger sample size would have allowed for the use of more robust analysis techniques, such as structural equation modeling. Additionally, the study provides no correlation between death anxiety and the antiepileptic medications used by the patients. This correlation was difficult to test as most of the patients were using more than one drug and the majority of them have changed medication during the course of their treatment.

Based on the present findings, it is recommended that both counselors and physicians consider appropriate treatment strategies to reduce the psychiatric co- morbidity of death anxiety in patients with epilepsy. In particular, the results suggest that patients with recent diagnosis, who are female and poorly educated, represent a significant risk group for attention. Treatment should be oriented to eliminate patient's fears by providing proper education about the causes and prevention of this disorder so that they can overcome their anxiety and improve their quality of life. For example, cognitive behavioral therapy is a structured psychological treatment which is of proven efficacy for depression and anxiety. This approach, which has been advocated for the treatment anxiety related to epilepsy,[23] depends upon clear descriptions of symptom onset and maintenance with homework between sessions to reduce symptom severity.

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References

1. Templer DI, Lavoie M, Chalgujlan H, Thomas-Dobson S. The stress of post-disaster body handling and victim identification work. *J Clin Psychol* 1990;**46**:834—9.
2. Sinha SP, Nigan M. Stress and death anxiety. *Ind J Clin Psychol* 1993;**20**:78—81.
3. Hintze J, Templer DI, Cappellety GG, Fredrick W. In: Neimeyer RA, editor. *Death anxiety handbook*. Washington, DC: Talyor and Francis; 1994.
4. Piazzini A, Canger R. Depression and anxiety in patients with epilespy. *Epilepsia* 2001;**42**(Suppl. 1):29—31.
5. Scheepers M, Keer M. Epilepsy and behaviour. *Curr Opin Neurol* 2003;**16**:183—7.

6. Kohler CG, Carran MA, Bilker W, O'Connor MJ, Sperling MR. Association of fear auras with mood and anxiety disorders after temproal lobectomy. *Epilepsia* 2001;**42**:674—81.
7. Alvarado KA, Templer DI, Bresler C, Thomas-Dobson S. The relationship of religious variables to death depression and death anxiety. *J Clin Psychol* 1995;**51**:202—4.
8. Man CC, Chung C, Easthope Y. Traumatic stress and death anxiety among community residents exposed to an aircraft crash. *Death Stud* 2000;**24**:689—705.
9. Leming MR, Dickinson GE. *Understanding dying, death, and bereavement*. New York: Holt, Rinehart, & Winston; 1985 .
10. Cont HR, Weiner MB, Plutchik R. Measuring death anxiety: psychometric and factor-analytic aspect. *J Pers and Soc Psychol* 1982;**43**:775—85.
11. Templer DI, Lester D, Ruff CF. Fear of *death* and femininity. *Psychol Rep* 1974;**35**:530.
12. Ghwanmeh M. *Death anxiety and its relationship with type "A" personality in cardiac patients in Queen Alia's heart Center*. Masters thesis. Jordan: Yarmouk University; 2003.
13. Solomon S, Greenberg J, Pyszczynski T. Terror management theory of self-esteem. In: Snyder CR, Forsyth DR, editors. *Handbook of social and clinical psychology*. New York: Pergamon; 1991. p. 21—40.
14. Lee WL. Long-term sequelae of epilepsy. *Ann Acad Med Singapore* 1989;**18**(January):49—51.
15. Torta R, Keller R. Behavioral, psychotic, and anxiety disorders in epilepsy: etiology, clinical features, and therapeutic implications.. *Epilepsia* 1999;**40**(Suppl. 10):S2—0.
16. Abdel-Khalek AM. Death anxiety in Spain and five Arab countries. *Psychol Rep* 2003;**93**(October):527—8.
17. Rigdon MA, Epting FR. Reduction in death threat as a basis for optimal functioning. *Death Stud* 1985;**9**:427—48.
18. Servaty HL, Krejci MJ, Hayslip. Relationships among death anxiety, communication apprehension with the dying, and empathy in those seeking occupations as nurses and physicians. *Death Stud* 1996;**20**:149—61.
19. Marks A. Race and sex differences and fear of dying. *Omega: J Death Dying* 1986;**17**:229.
20. Gesser G, Wong PT, Reker GT. Death attitudes across the life span: the development and validation of the death attitude profile. *Omega: J Death Dying* 1997—1998;**18**:113—28.
21. Bell GS, Sander JW. The epidemiology of epilepsy: the size of the problem. *Seizure* 2001;**10**:306—14.
22. Abdel-Khalek AM. Death anxiety in clinical and non-clinical groups. *Death Stud* 2005;**29**(April):251—9.
23. Jackson MJ, Turkington D. Depression and Anxiety in epilepsy. *J Neural Neurosurg Psychiatry* 2005;**76**(Suppl. I):i45—7.